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FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
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PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,
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ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU,
TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE,
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RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
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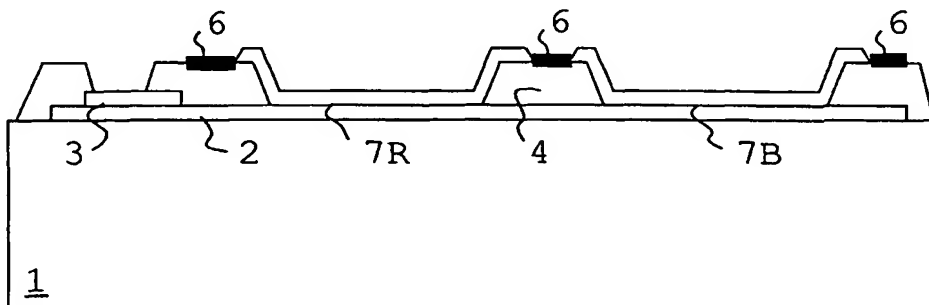
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For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: METHOD FOR MANUFACTURING A LIGHT EMITTING DISPLAY



(57) Abstract: The invention relates to a method for manufacturing a light emitting display comprising a plurality of light emitting elements on a substrate, wherein at least one delimiting means is provided on or over the substrate for at least partially bounding sites for deposition of a fluid light emitting substance to form the light emitting elements. At least a part of at least one of the delimiting means is repellent to the fluid light emitting substance. The repellent part may comprise a hydrophobic flow barrier. The method has the advantage of an enhanced resolution of light emitting elements, especially if the fluid light emitting substance is deposited by means of inkjet printing and involves different materials for generating different colours of light.

INTERNATIONAL SEARCH REPORT

Internal Application No.

PCT/IB 03/04155

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H05B33/10 H01L51/40

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H05B H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	JP 2003 243164 A (V TECHNOLOGY CO LTD) 29 August 2003 (2003-08-29) abstract	1-3, 5, 7-10
X	EP 1 139 455 A (SEIKO EPSON CORP) 4 October 2001 (2001-10-04) column 2, line 33 -column 4, line 32 column 5, line 10-19 example 1	1, 3, 5, 6
X	PATENT ABSTRACTS OF JAPAN vol. 2002, no. 12, 12 December 2002 (2002-12-12) & JP 2002 237383 A (SEIKO EPSON CORP), 23 August 2002 (2002-08-23) abstract	1

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X Further documents are listed in the continuation of box C.

Y Patent family members are listed in annex.

° Special categories of cited documents :

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- "T"** later document published after the international filing date of priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X"** document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y"** document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&"** document member of the same patent family

Date of the actual completion of the international search

12 January 2004

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INTERNATIONAL SEARCH REPORT

Interr al Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>WO 01 47045 A (PLASTIC LOGIC LTD ;SIRRINGHAUS HENNING (GB); KAWASE TAKEO (GB); FR) 28 June 2001 (2001-06-28) the whole document</p> <p>-----</p>	1-3,5-10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 03/04155

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-6

Method for manufacturing a light emitting display comprising a plurality of light emitting elements on a substrate, having at least one delimiting means, being repellent to the fluid light emitting substance.

2. Claims: 7-10

Light emitting display comprising a plurality of light emitting elements on a substrate, comprising light emitting materials in which some of the sites are partially bounded by a hydrophobic flow barrier.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern: Application No

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 2003243164	A	29-08-2003	NONE	
EP 1139455	A	04-10-2001	CN 1320011 A EP 1139455 A2 JP 2002237383 A TW 490997 B US 2003211643 A1 US 2002016031 A1	31-10-2001 04-10-2001 23-08-2002 11-06-2002 13-11-2003 07-02-2002
JP 2002237383	A	23-08-2002	CN 1320011 A EP 1139455 A2 TW 490997 B US 2003211643 A1 US 2002016031 A1	31-10-2001 04-10-2001 11-06-2002 13-11-2003 07-02-2002
WO 0147045	A	28-06-2001	AU 2015901 A AU 2016001 A AU 2206601 A AU 2206901 A BR 0016643 A BR 0016660 A BR 0016661 A BR 0016670 A CA 2394881 A1 CA 2394886 A1 CA 2394895 A1 CA 2395004 A1 CN 1425201 T CN 1425202 T CN 1425203 T CN 1425204 T EP 1243032 A2 EP 1243033 A1 EP 1243034 A1 EP 1243035 A2 WO 0147043 A1 WO 0146987 A2 WO 0147044 A2 WO 0147045 A1 JP 2003518332 T JP 2003518754 T JP 2003518755 T JP 2003518756 T US 2003059984 A1 US 2003059987 A1 US 2003059975 A1 US 2003060038 A1 TW 518760 B	03-07-2001 03-07-2001 03-07-2001 03-07-2001 07-01-2003 25-02-2003 25-02-2003 24-06-2003 28-06-2001 28-06-2001 28-06-2001 28-06-2001 18-06-2003 18-06-2003 18-06-2003 18-06-2003 25-09-2002 25-09-2002 25-09-2002 25-09-2002 28-06-2001 28-06-2001 28-06-2001 28-06-2001 03-06-2003 10-06-2003 10-06-2003 10-06-2003 27-03-2003 27-03-2003 27-03-2003 27-03-2003 21-01-2003

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern: Application No

PCT/IB 03/04155

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 2003243164	A	29-08-2003	NONE	
EP 1139455	A	04-10-2001	CN 1320011 A	31-10-2001
			EP 1139455 A2	04-10-2001
			JP 2002237383 A	23-08-2002
			TW 490997 B	11-06-2002
			US 2003211643 A1	13-11-2003
			US 2002016031 A1	07-02-2002
JP 2002237383	A	23-08-2002	CN 1320011 A	31-10-2001
			EP 1139455 A2	04-10-2001
			TW 490997 B	11-06-2002
			US 2003211643 A1	13-11-2003
			US 2002016031 A1	07-02-2002
WO 0147045	A	28-06-2001	AU 2015901 A	03-07-2001
			AU 2016001 A	03-07-2001
			AU 2206601 A	03-07-2001
			AU 2206901 A	03-07-2001
			BR 0016643 A	07-01-2003
			BR 0016660 A	25-02-2003
			BR 0016661 A	25-02-2003
			BR 0016670 A	24-06-2003
			CA 2394881 A1	28-06-2001
			CA 2394886 A1	28-06-2001
			CA 2394895 A1	28-06-2001
			CA 2395004 A1	28-06-2001
			CN 1425201 T	18-06-2003
			CN 1425202 T	18-06-2003
			CN 1425203 T	18-06-2003
			CN 1425204 T	18-06-2003
			EP 1243032 A2	25-09-2002
			EP 1243033 A1	25-09-2002
			EP 1243034 A1	25-09-2002
			EP 1243035 A2	25-09-2002
			WO 0147043 A1	28-06-2001
			WO 0146987 A2	28-06-2001
			WO 0147044 A2	28-06-2001
			WO 0147045 A1	28-06-2001
			JP 2003518332 T	03-06-2003
			JP 2003518754 T	10-06-2003
			JP 2003518755 T	10-06-2003
			JP 2003518756 T	10-06-2003
			US 2003059984 A1	27-03-2003
			US 2003059987 A1	27-03-2003
			US 2003059975 A1	27-03-2003
			US 2003060038 A1	27-03-2003
			TW 518760 B	21-01-2003